CS 175
11 Jacobs

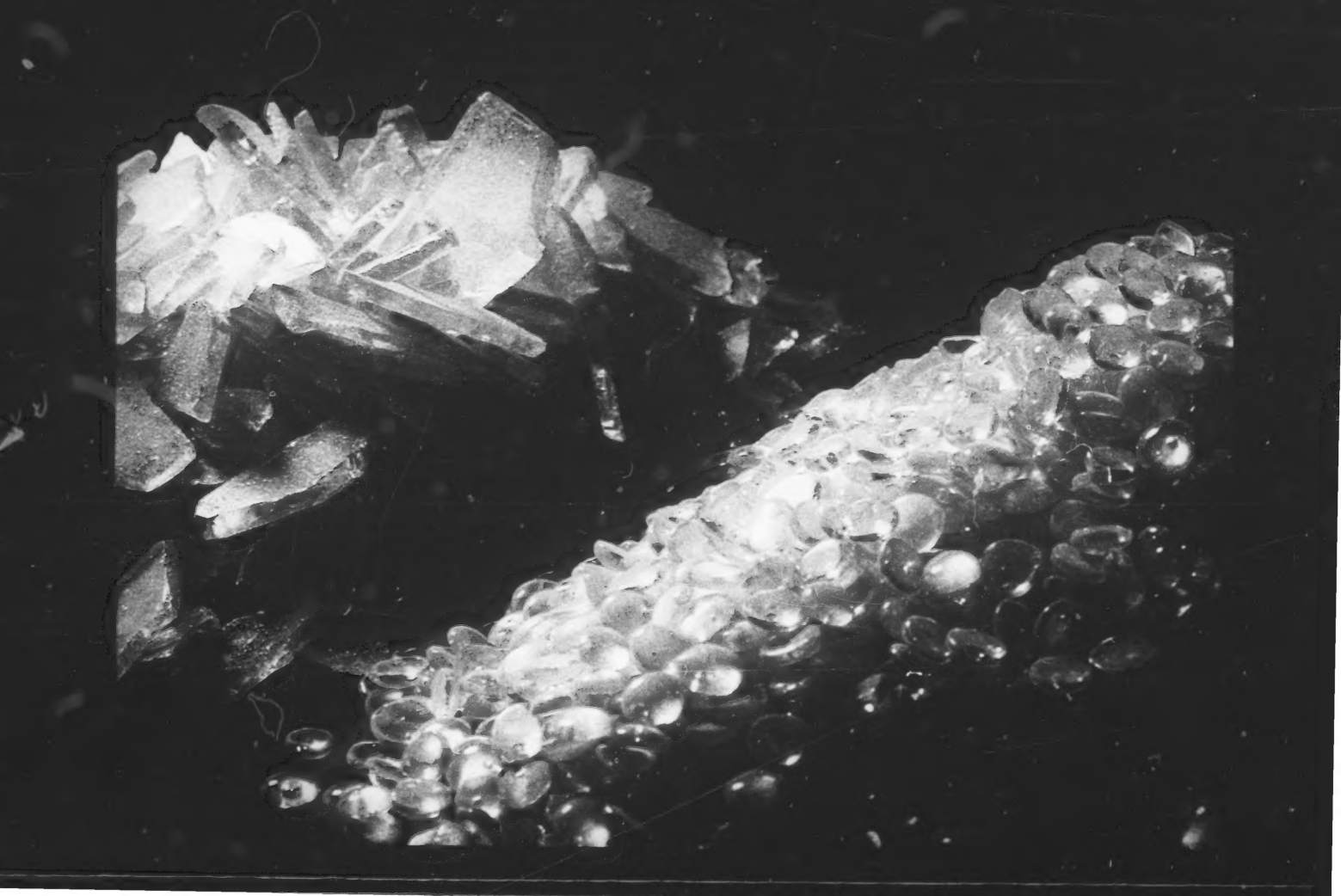
RubberWorld

Formulating TPEs for adhesives

FKM in expansion joints

Tire cord to NR adhesion

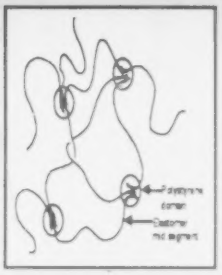
Optimizing CB loading for explosive decompression resistance



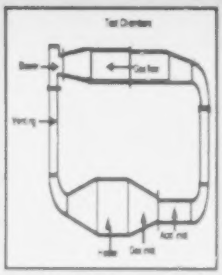
Contents

Vol. 199, No. 2/November 1988

Adhesives and sealants



TPEs for adhesives p. 16



FKM in flue duct expansion joints p. 24

6 Business Briefs
Acquisitions, expansions; contracts, licenses; financial statements; markets, news.

12 Tech Service: Thickness - a sound alternative
by Jon Menough, contributing technical service editor. This month's column looks at a non-contact thickness measuring gauge developed for use in the rubber industry by Ultrasonic Arrays.

14 Urethane Forum: New polyurea/amides for easier processing
Column examines a new class of polyurea/amide RIM elastomers from BASF, which can be processed easily on standard high pressure mixing machines in the advanced development stage. Flexible foam technology from Dow Chemical, and reaction foaming machines from Klockner Ferromatik Desma are also featured in this month's column.

16 Formulating TPEs for adhesives
by Kendall F. Foley, Hercules, Inc. The author reviews the concepts involved in formulating thermoplastic block copolymers for adhesives.

24 FKM in flue duct expansion joints
by R.J. Arhart and W. Roman, Du Pont. This article describes a laboratory test chamber used to evaluate compound selection by exposure to corrosive flue gas.

36 Optimizing carbon black loading for explosive decompression resistance of fluoroelastomers for oil field service
by L.A. Peters and J.C. Vicic, FMC Central Engineering Laboratories, and T.L. Pugh, Conoco-PRD. This article extends the previous work done on tire tread compounds to the study of fluoroelastomer compounds, which are the performance elastomers of the oil patch.

40 A novel system for nylon-6 tire cord to natural rubber adhesion
by Rakesh Jain and Golok Bihari Nando, Indian Institute of Technology. This study deals with the adhesion of both dipped and undipped nylon-6 cord to natural rubber bonding in the presence of the dry bonding agents.

50 Techno Mart

Departments

4	Editorial	45	Meetings	58	Literature
44	Calendar	57	Jobs & People	60	Ad Index

Cover

Cover photo courtesy of Hercules, Inc.

A Lippincott & Peto Publication

Editorial

Kudos to the Rubber Division for an excellent meeting in Cincinnati. As usual, the technical program was top notch. The attendance figures tell you that. The "Mini" Expo was a hit. The number of those signing up for the next one in Washington, D.C. attests to that. This experiment appears to be a huge success and we applaud the decision to continue this off-expo year exhibit of suppliers to this industry. This show exceeded most attendees' expectations in quality and quantity, and will be a welcome addition to these meetings.

The Division announced the formation of two new rubber groups, or subdivisions. They are the St. Louis Rubber Group and the Thermoplastic Elastomers Topical Group. The former is formed along the traditional rubber group way - by geographical area - and the latter is a departure from the norm, but appears to be the first of other groups formed devoted to a single subject. The TETG is a result of a Division ad hoc committee recommending the division to form such associations. This looks like a good move by the Division. It's no secret that the Rubber Division isn't the only association vying for its members. It's also no secret that those in the elastomer industry consider TPEs as theirs, as do members of the plastics industry. Regardless of where these materials fall, creating a rubber group specifically for them can only benefit the Division, its members and the participating companies.

The creation of the TETG also shows a flexibility within the Division to adapt to new technologies as they arise. It should make for stronger technical meetings because of the more defined focus the group will bring to its symposia. It also paves the way for similar, single interest groups, to be formed and take part in the biannual meetings. Tires is one that comes to mind.

One decision the Division made at the Cincinnati meeting that doesn't sit too well is the announcement there would be no Sparks-Thomas award winner for the second year in a row. This award, which is to recognize and encourage outstanding scientific contributions and innovations in the field of elastomers by younger scientists, technologists or engineers, has only been awarded once since its inception three years ago. We feel not awarding this reflects badly on the Division and does anything but encourage younger members. One award announcement, that Ben Kastein would receive the Distinguished Service Award, we applaud heartily. Anyone who has been involved in the Rubber Division is aware of Ben's contributions. The former division chairman and now historian, has given nothing but distinguished service to the Division and the rubber industry. Ben was also a technical editor for *Rubber World* and his contributions were exemplary. A real deserving choice for this award.

Don R. Smith
Editor

RubberWorld

EDITORIAL STAFF

Don R. Smith editor
Dr. Walter C. Warner technical editor
Jill Wrigley managing editor
Julie Wagner associate editor
Deanne Dodd composition editor
Jon Menough contributing technical service editor

BUSINESS STAFF

Job Lippincott publisher
John W. Peto v.p. sales
Barbara Gordon adv. production manager
Jane McBee assistant adv. production manager

EDITORIAL OFFICES

P.O. Box 5485
1867 W. Market Street
Akron, Ohio 44313
(216) 864-2122
Telex: 297690 RWMAG UR

OTHER LIPPINCOTT & PETO PUBLICATIONS

- Product News
- Automotive Polymers & Design
- Blue Book: Materials, Compounding Ingredients, and Machinery for Rubber

RUBBER WORLD, ISSN-0035-9572, November 1988 Vol. 199, No. 2. Copyright: Lippincott & Peto, Inc. 1988; all rights reserved. J.H. Lippincott, John W. Peto, owners. Published monthly with two special issues in February and August at 1867 West Market St., Akron, OH 44313 by Lippincott & Peto, Inc. Editorial and Executive Offices at 1867 West Market St., Akron, OH 44313. Second-Class postage paid at Akron, OH and at additional mailing offices. Postmaster: please send changes of address to RUBBER WORLD, Circulation Dept., P.O. Box 302, CromPond, NY 10517. Subscription Rates: United States, 1 year $27; Canada, $32; Foreign, $43 in U.S. currency by U.S. bank draft or international money order. Single copies $3.00. November 1988.

All rights reserved.

Business Briefs

technical service resources around the world.

Uniroyal also acquired the rights to manufacture and market the complete product line of ambient-cured sprayable, castable and trowelable urethane systems developed by **Wear Resistant Materials Pty.**, of Australia.

Monsanto Chemical is doubling the production capacity for Santoprene rubber at its plant in Newport, South Wales. The expansion is to be completed by mid 1989.

Monsanto has also completed the product form improvement and packaging automation phase of a $14 million modernization project at its Nitro, WV plant. The total project is to be completed in 1990.

General Electric will invest $1.7 billion dollars over the next 15 years in a new plant in Cartegena, Spain. It will be the first basic silicones investment in Europe and will become part of the proposed **GE/Union Carbide** joint venture, **GE Carbide Silicones.** The facility will initially produce silicone and will later add polymers from the company's plastics product line.

Dow Chemical is expanding global production capacity for polyether polyols by building new plants in Taiwan and Columbia, each with over 30 million pounds of capacity; an incremental expansion of the Brazilian facility of more than 20 million pounds for specialty polyols; and a 55 million pound increase at the Freeport, TX facility.

Polysar has opened a new technical center in Akron, OH to support the polymers sealants/adhesives business worldwide.

RMA tire report through June
(figures in thousands of units)

Passenger tires	YTD '88	YTD '87	% change
Shipments			
original equipment	35,383	35,602	-0.7
radial	30,131	30,191	-0.2
replacement	101,797	97,263	4.7
radial	95,120	86,860	9.5
export	6,300	3,703	70.1
radial	5,572	3,226	72.7
total	143,459	136,568	5.0
radial	130,823	120,277	8.8
Production	116,442	110,607	5.3
radial	105,838	96,905	9.2
Truck & bus tires			
Shipments			
original equipment	5,879	5,265	11.6
radial	4,293	3,656	17.4
replacement	22,187	22,335	-0.7
radial	12,915	11,945	8.1
export	2,157	1,285	67.8
radial	1,672	909	84.0
total	30,222	28,886	4.6
radial	18,880	16,510	14.4
Production	24,300	23,326	4.2
radial	14,877	13,202	12.7

BASF opened a thermoplastic polyurethane applications development lab in Wyandotte, MI.

Air Products and Chemicals established a coatings lab near Allentown, PA. The company also announced its **Anchor Chemical** unit has taken over the Impex epoxy curing agent business of the **Penultimate Corp.** of Huntington Beach, CA.

Amoco Performance Products has begun construction on a multi-million dollar compounding facility in Geel, Belgium. The company's first overseas plant will compound a range of engineering polymer products for the European market and is scheduled to be completed by the end of next year.

Castrol Inc. will purchase **Chem-Trend,** Howell, MI for $46 million. Chem-Trend, a supplier of mold release agents has manufacturing facilities in Denmark, the UK, France, Sweden, South Korea, Mexico and Brazil.

Jasper Rubber Products is undertaking a $1.5 million expansion to add 25,000 sq. ft. to its Jasper, IN plant. Some of the new footage will be used for new rubber and silicone injection presses.

Midwest Elastomers has begun operations of a new specialty grinding department to process high-value polymers.

Nassau Chemical has been merged into its parent company, **Wyrough & Loser, Inc.**

Bridgestone acquired **Good-Wear Treaders Ltd.**, an independent tire dealer in Atlantic Canada.

DSM Resins opened new research laboratories at Zwolle, The Netherlands.

Ashland Chemical acquired **Royell, Inc.**, Menlo Park, CA, a distributor of glass reinforcements, unsaturated polyester resins and other fiber-reinforced plastic materials.

ICI Fluoropolymers is undertaking a $40 million project at its Bayonne, NJ facilities that includes constructing a new fluoroethylpropylene plant and doubling of fluoromonomer production.

Jack Scheidell, formerly with R.E. Carroll and Sun Refining, has established **Jack Scheidell & Son** in Trenton, NJ to serve as sales consultants and manufacturers representatives.

Bohlin Reologi has opened a regional sales office in Chicago, IL for its rheological testing instrumentation.

D&A International, Sacramento, CA is building a $2.5 million latex centrifuging plant in Sri Lanka. The company is also forming a joint venture with the Sri Lankans to build a $5.5 million latex glove manufacturing plant that will produce 250 million latex examination gloves annually upon completion in September, 1989.

Firestone Building Products purchased the assets of **Teltex/ICM,** North Branford, CT, a manufacturer of modified bitumen roofing products.

Mercer Products, an operating unit of **Dexter Plas-**